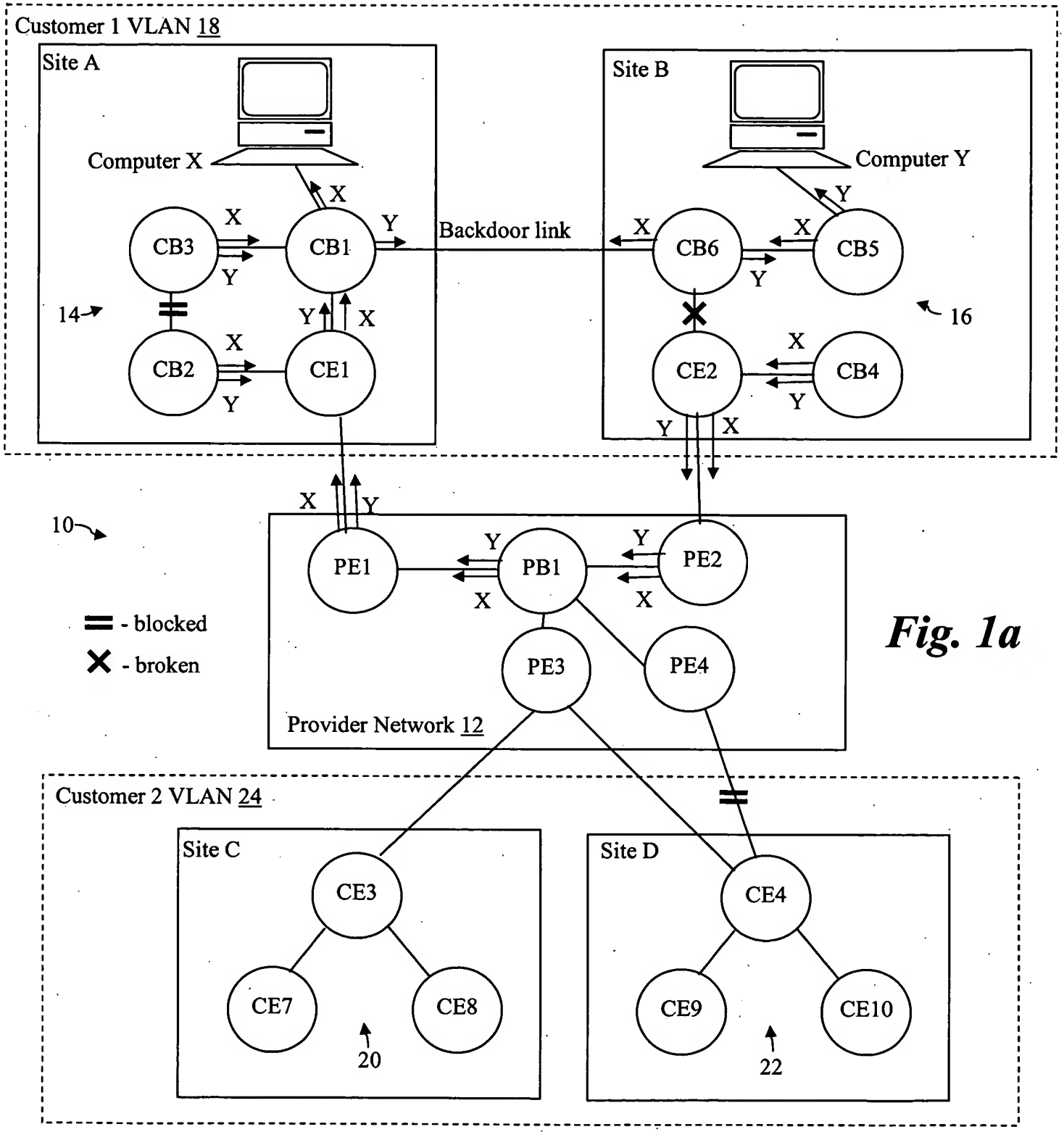

Customer 1 VLAN 18
Site A
Computer X
CB3
CB1
CB2
CE1
14
Backdoor link
Site B
Computer Y
CB6
CB5
CE2
CB4
16
10
PE1
PB1
PE2
PE3
PE4
Provider Network 12
= - blocked
X - broken
Customer 2 VLAN 24
Site C
CE3
CE7
CE8
20
Site D
CE4
CE9
CE10
22

Fig. 1a

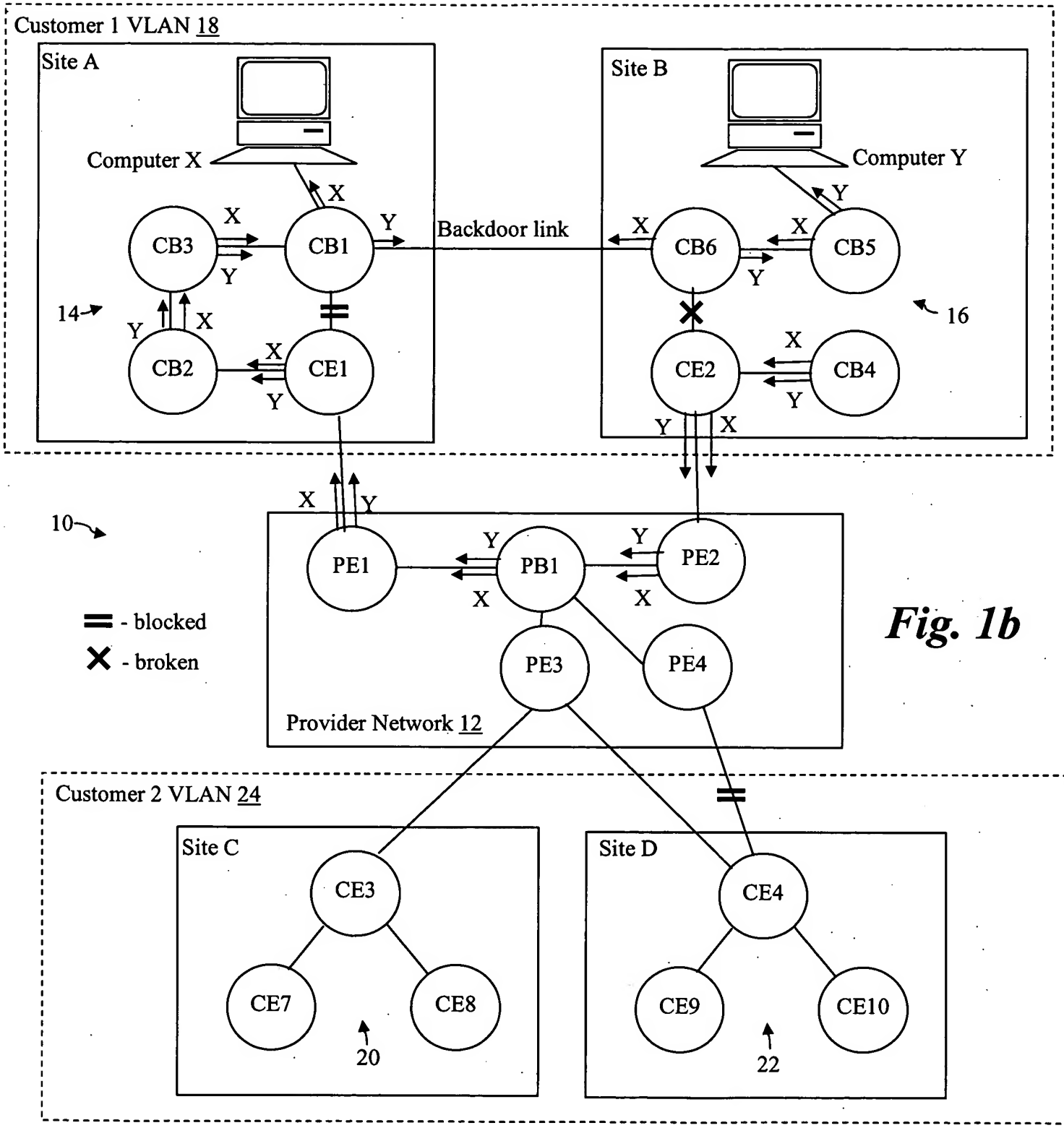

Customer 1 VLAN 18
Site A
Computer X
CB3
CB1
CB2
CE1
14
Backdoor link
Site B
Computer Y
CB6
CB5
CE2
CB4
16
10
PE1
PB1
PE2
PE3
PE4
Provider Network 12
= - blocked
X - broken
Customer 2 VLAN 24
Site C
CE3
CE7
CE8
20
Site D
CE4
CE9
CE10
22

Fig. 1b

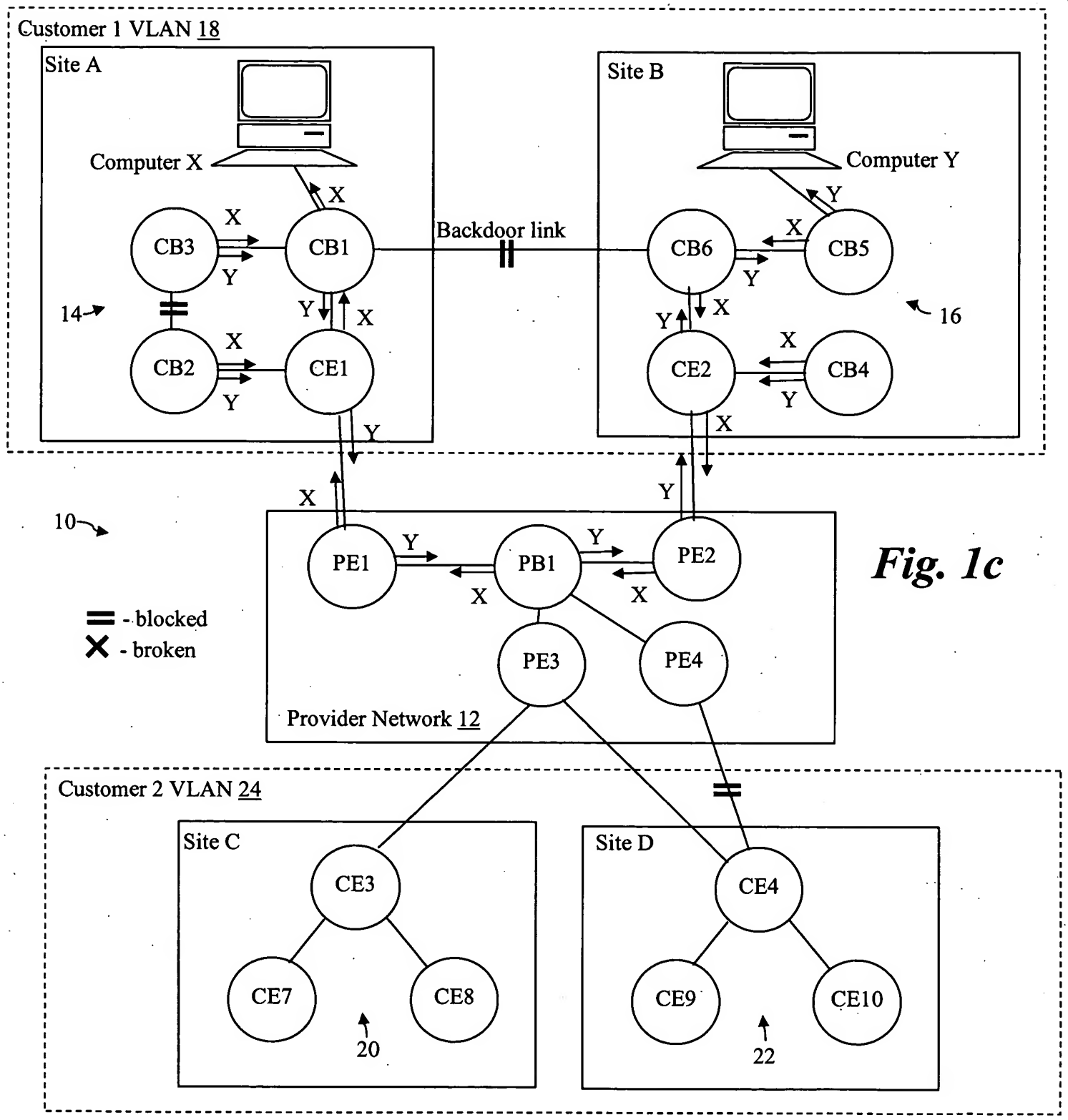

Customer 1 VLAN 18
Site A
Computer X
CB3
CB1
CB2
CE1
14
Backdoor link
Site B
Computer Y
CB6
CB5
CE2
CB4
16
10
PE1
PB1
PE2
PE3
PE4
Provider Network 12
= - blocked
X - broken
Customer 2 VLAN 24
Site C
CE3
CE7
CE8
20
Site D
CE4
CE9
CE10
22

Fig. 1c

Fig. 2a

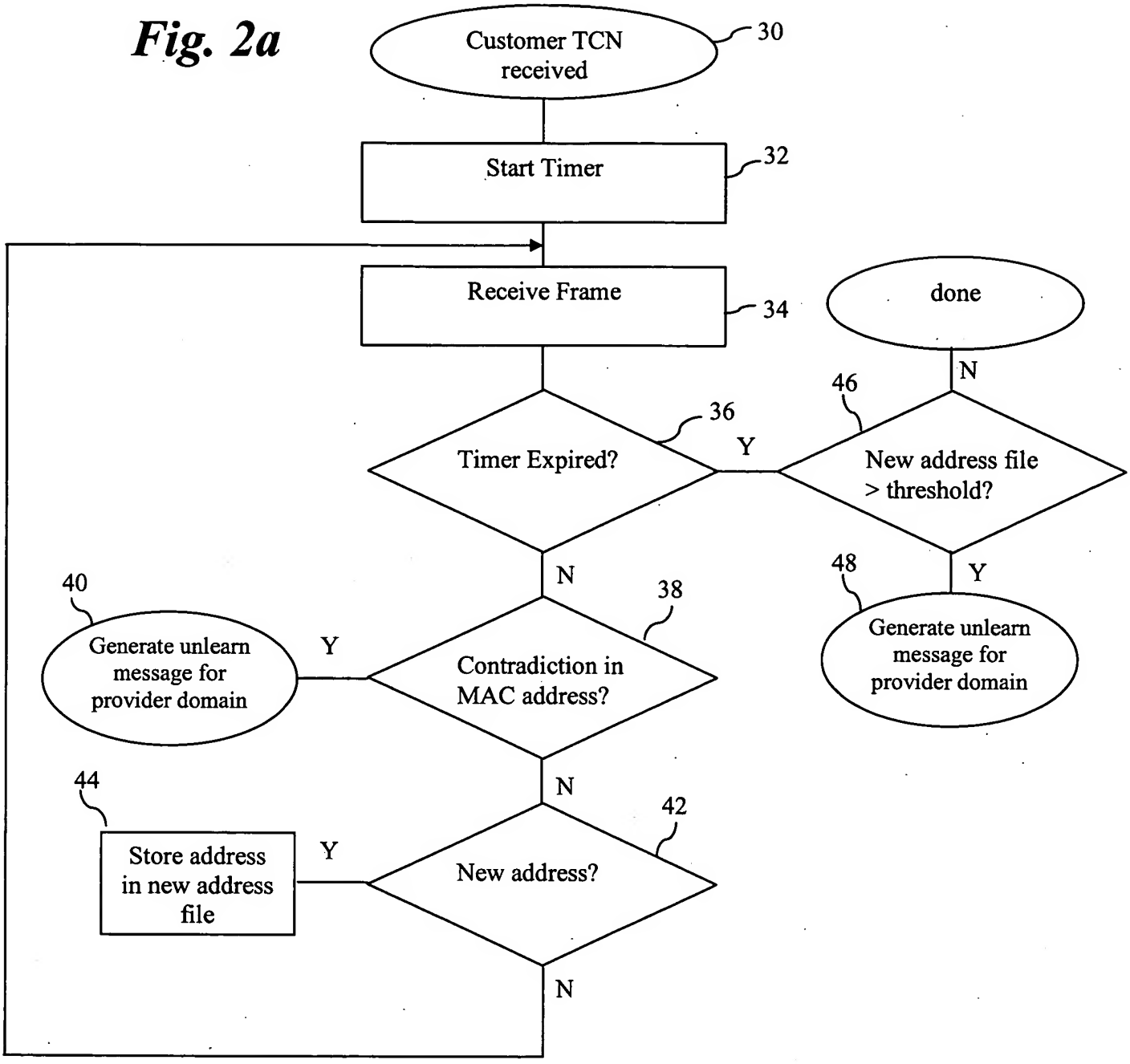
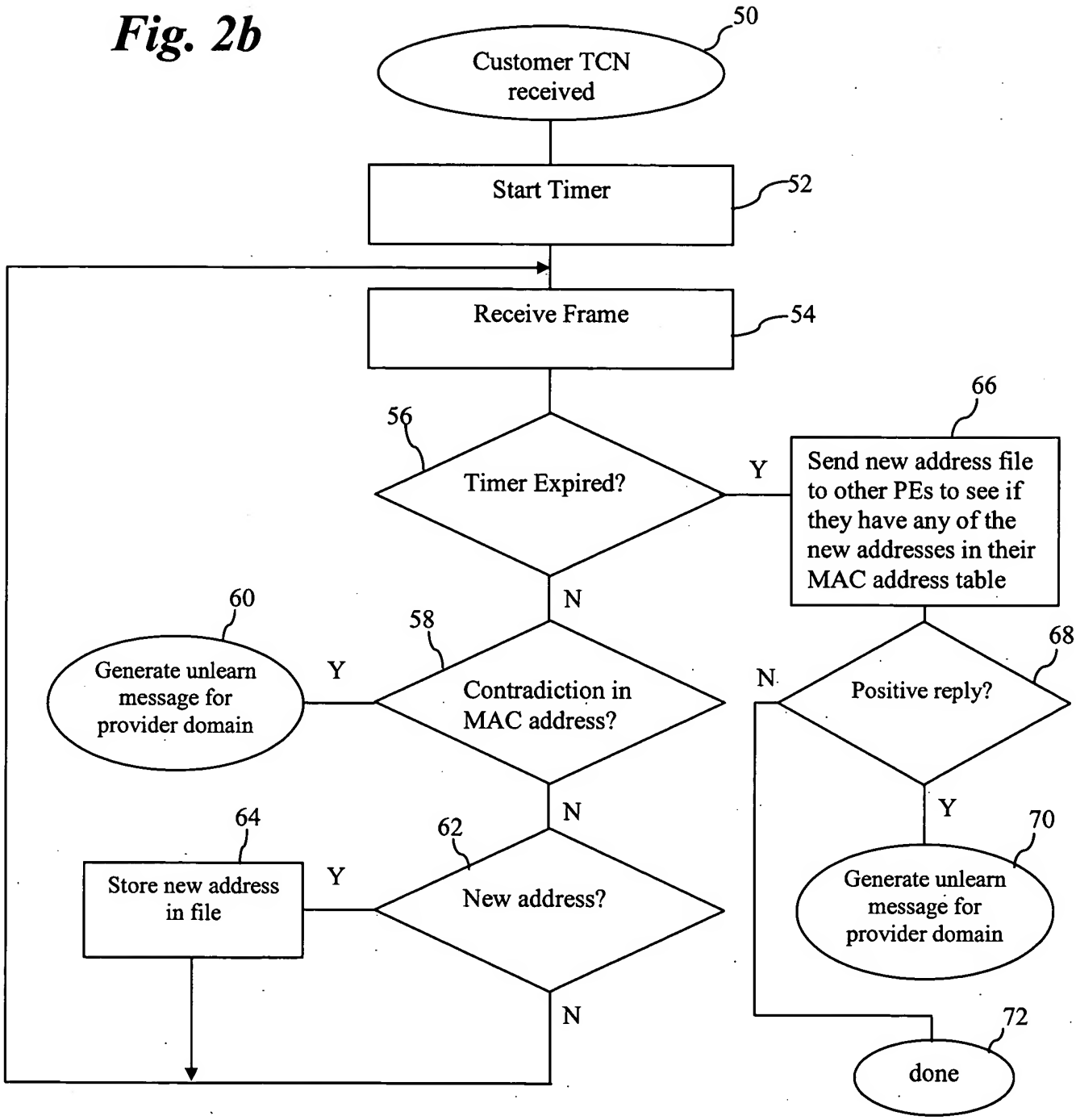

Customer TCN received
30
Start Timer
32
Receive Frame
34
Timer Expired?
36
Y
N
done
N
46
New address file > threshold?
Y
48
Generate unlearn message for provider domain
38
Contradiction in MAC address?
Y
40
Generate unlearn message for provider domain
N
42
New address?
Y
44
Store address in new address file
N

Fig. 2b


50
Customer TCN received
Start Timer
52
Receive Frame
54
56
Timer Expired?
Y
66
Send new address file to other PEs to see if they have any of the new addresses in their MAC address table
N
60
Generate unlearn message for provider domain
Y
58
Contradiction in MAC address?
N
68
Positive reply?
N
Y
64
Store new address in file
Y
62
New address?
N
70
Generate unlearn message for provider domain
N
72
done

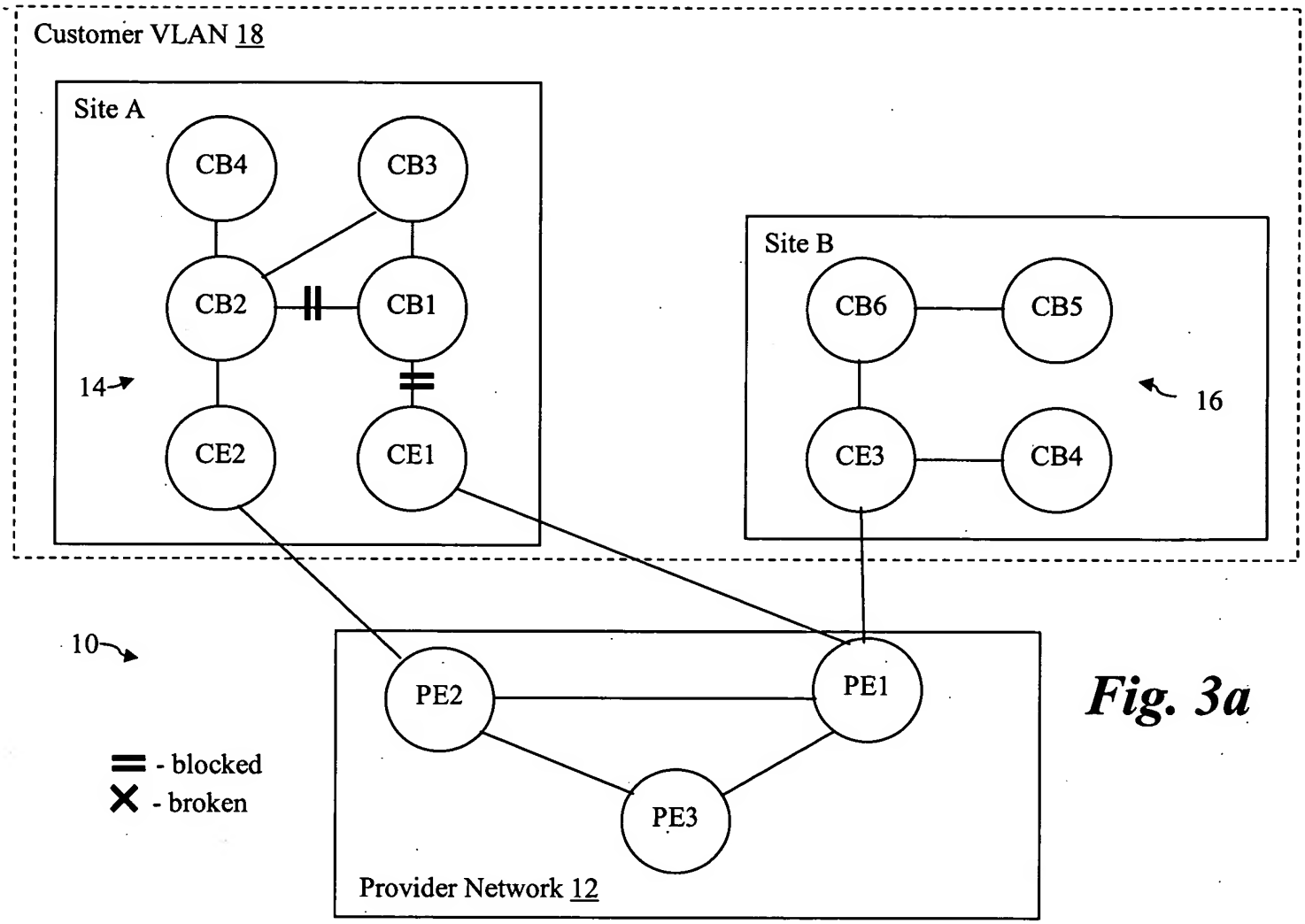

Customer VLAN 18
Site A
CB4
CB3
CB2
CB1
14
CE2
CE1
Site B
CB6
CB5
16
CE3
CB4
10
PE2
PE1
PE3
Provider Network 12
= - blocked
X - broken

Fig. 3a

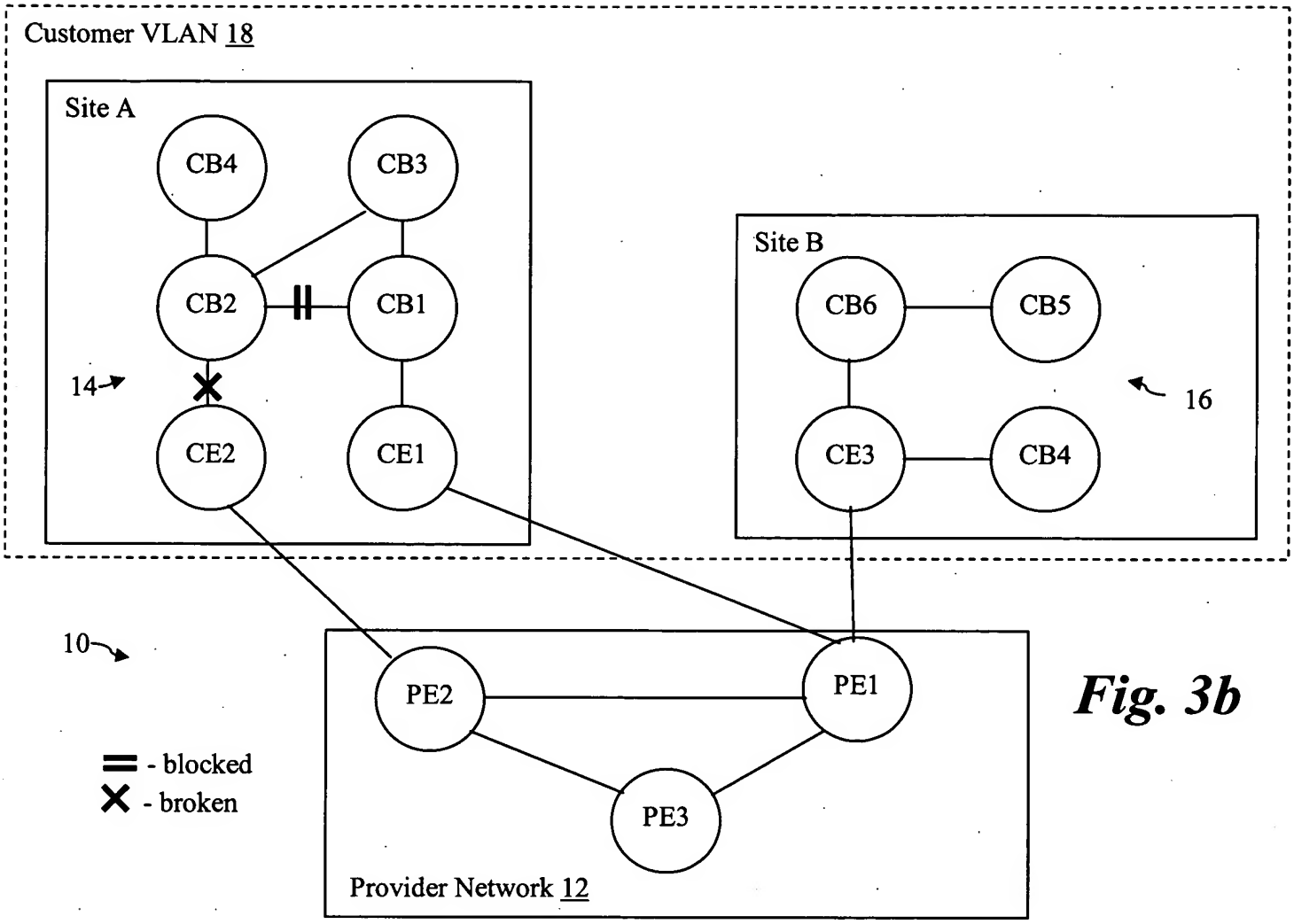

Customer VLAN 18
Site A
CB4
CB3
CB2
CB1
14
CE2
CE1
Site B
CB6
CB5
16
CE3
CB4
10
PE2
PE1
PE3
Provider Network 12
= - blocked
X - broken

Fig. 3b

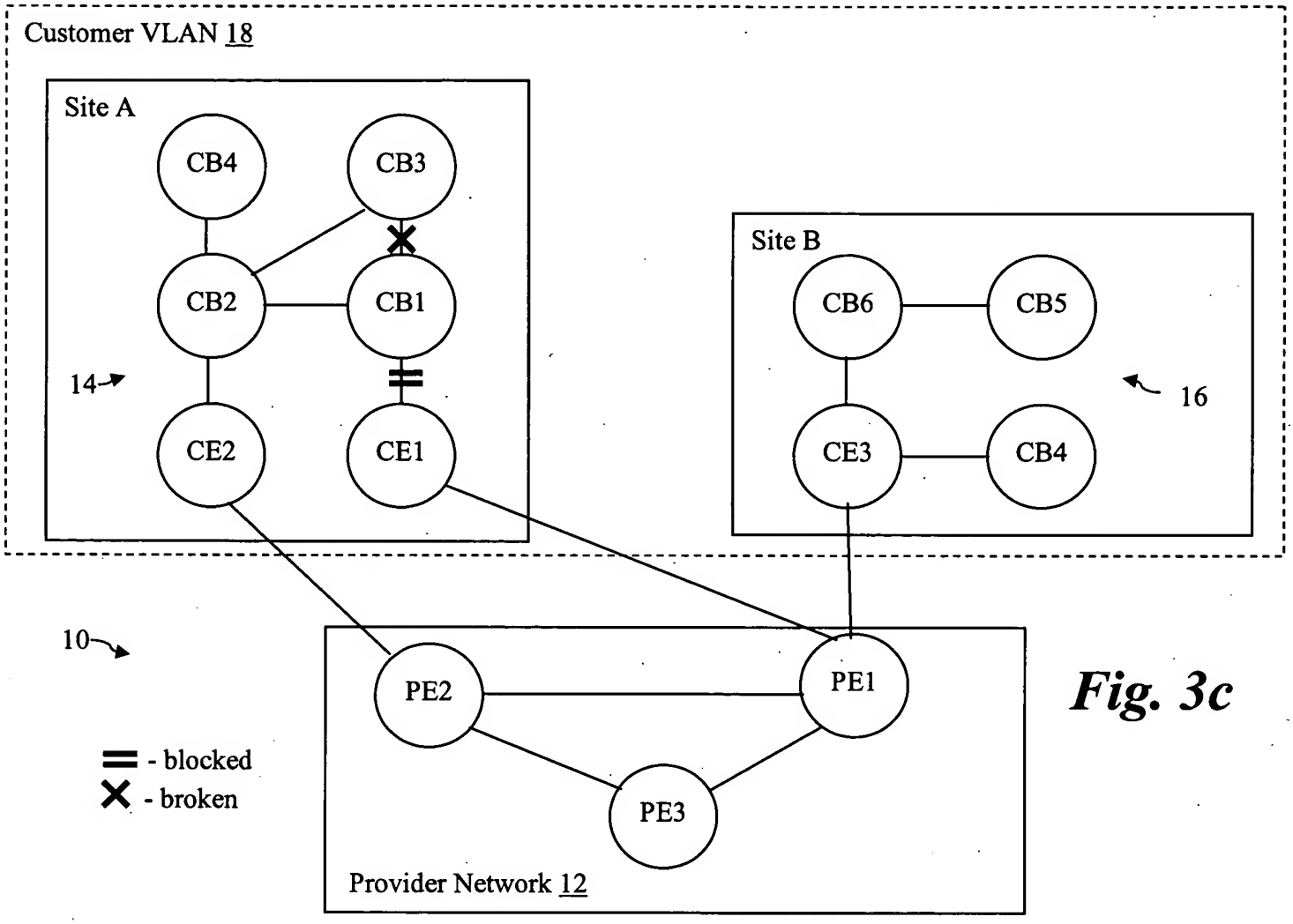

Customer VLAN 18
Site A
CB4
CB3
CB2
CB1
14
CE2
CE1
Site B
CB6
CB5
16
CE3
CB4
10
PE2
PE1
PE3
Provider Network 12
= - blocked
X - broken

Fig. 3c

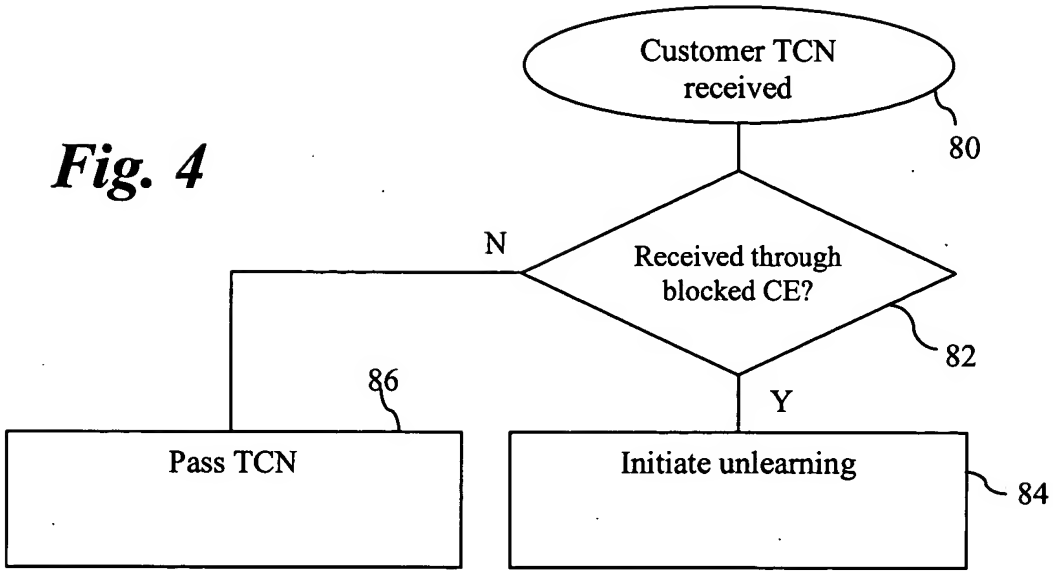

Customer TCN received
80
Received through blocked CE?
82
N
Y
86
Pass TCN
Initiate unlearning
84

Fig. 4

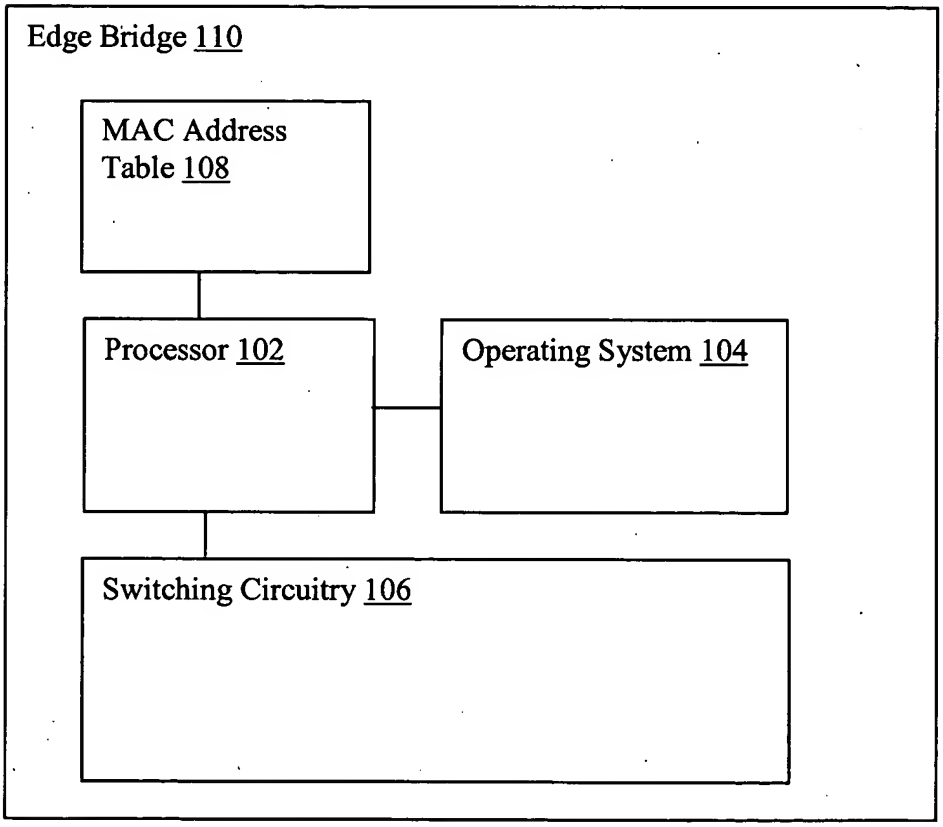

Edge Bridge 110
MAC Address Table 108
Processor 102
Operating System 104
Switching Circuitry 106

Fig. 9

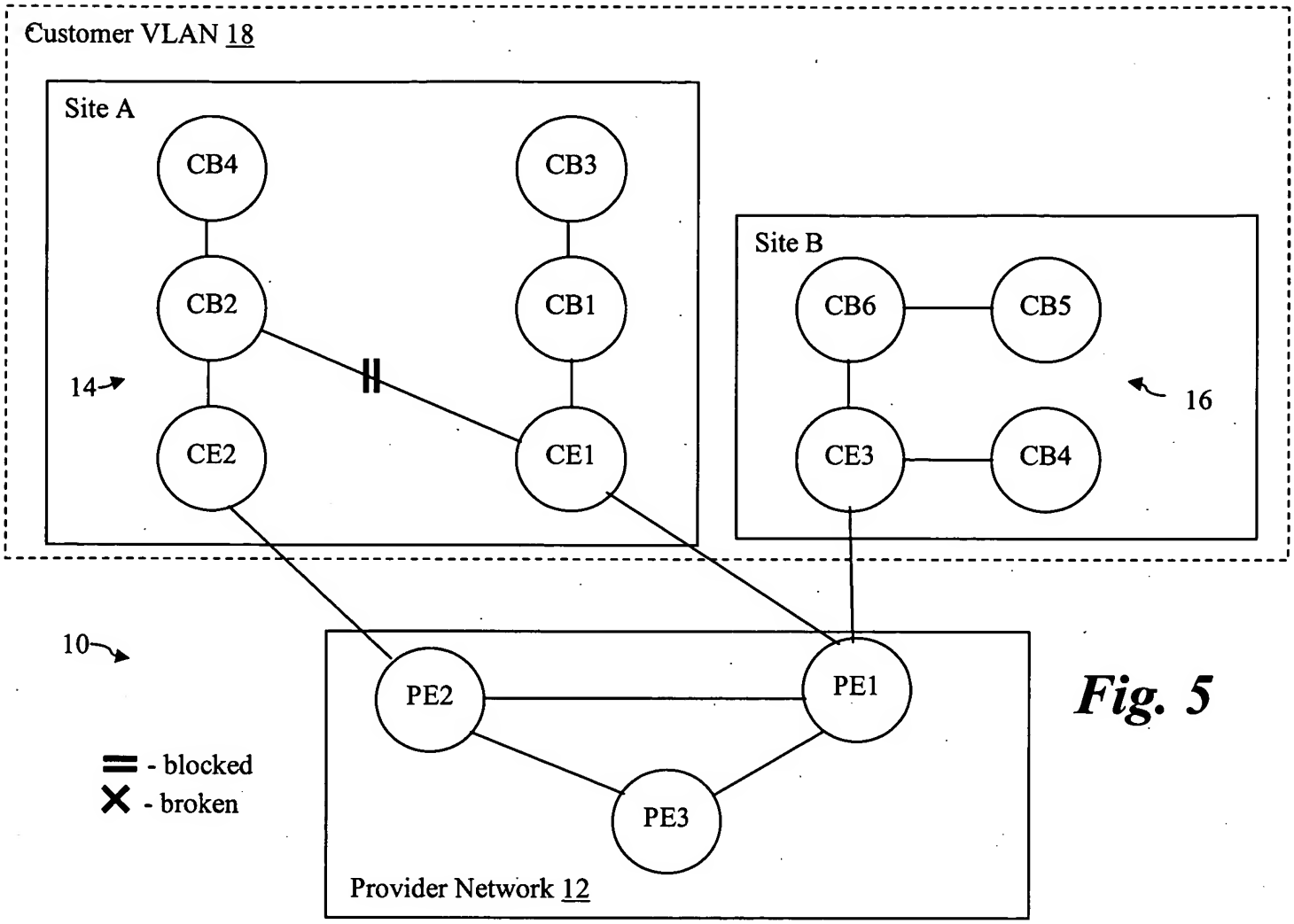
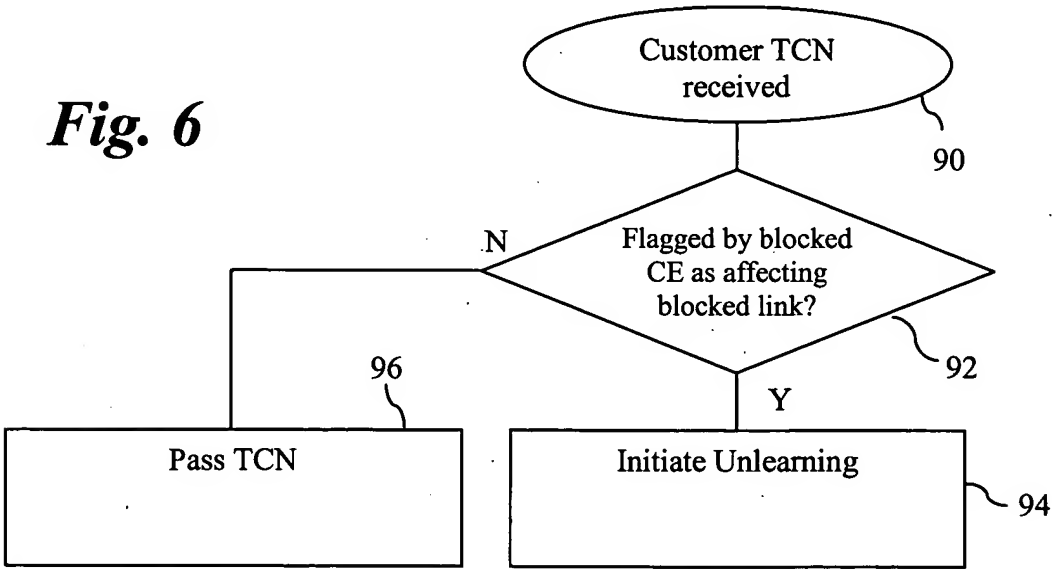

Customer VLAN 18
Site A
CB4
CB3
CB2
CB1
14
CE2
CE1
Site B
CB6
CB5
16
CE3
CB4
10
PE2
PE1
PE3
Provider Network 12
= - blocked
X - broken

Fig. 5

Fig. 6


Customer TCN received
90
N
Flagged by blocked CE as affecting blocked link?
92
96
Y
Pass TCN
Initiate Unlearning
94

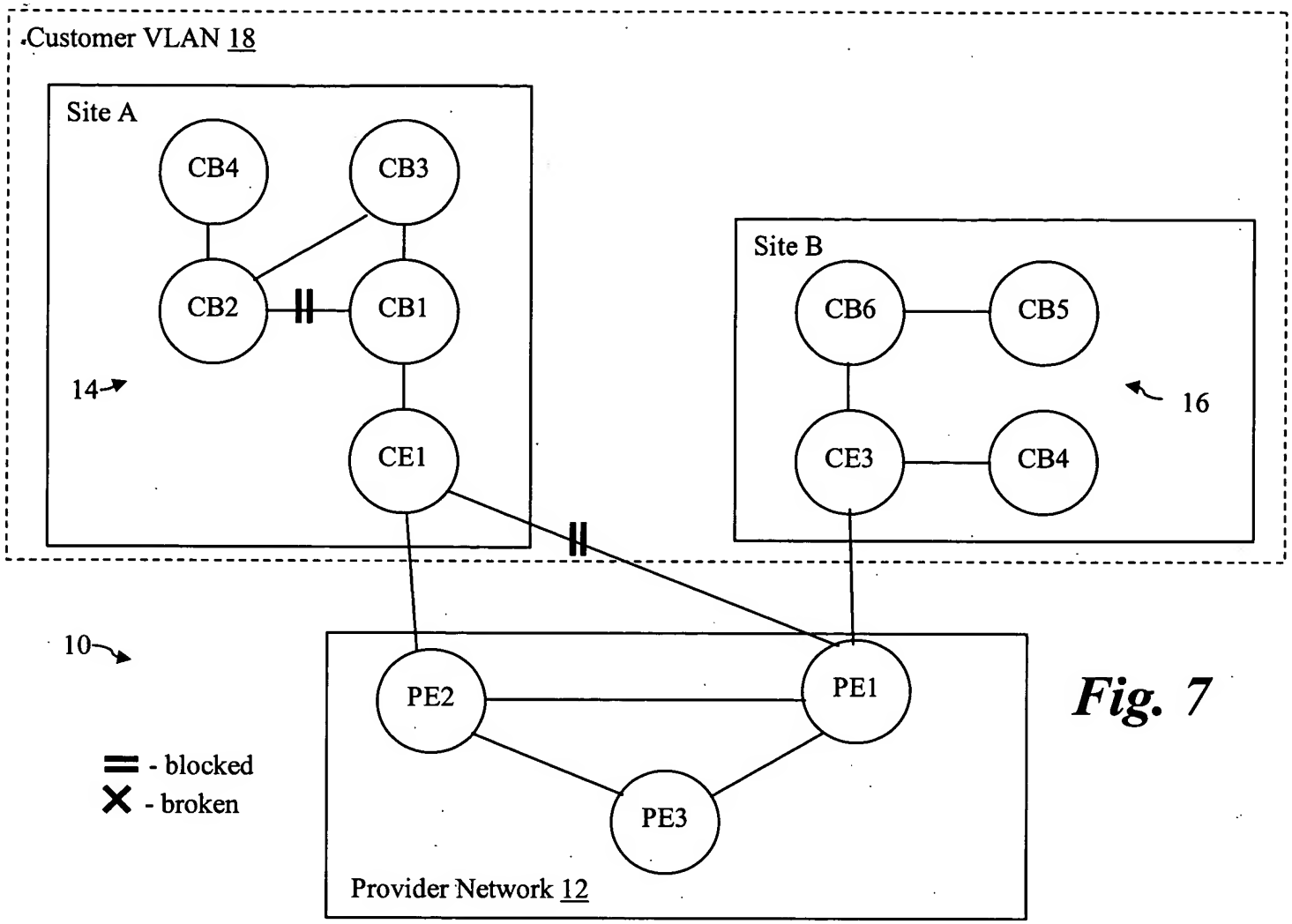
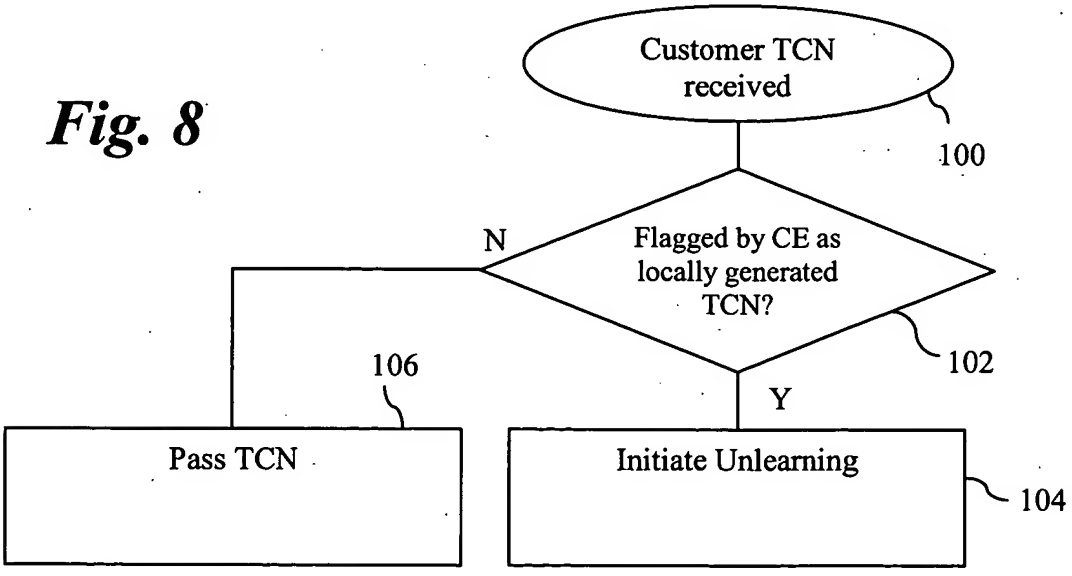

Customer VLAN 18
Site A
CB4
CB3
CB2
CB1
14
CE1
Site B
CB6
CB5
16
CE3
CB4
10
PE2
PE1
PE3
Provider Network 12
= - blocked
X - broken

Fig. 7

Fig. 8


Customer TCN received
100
Flagged by CE as locally generated TCN?
N
102
Y
106
Pass TCN
Initiate Unlearning
104